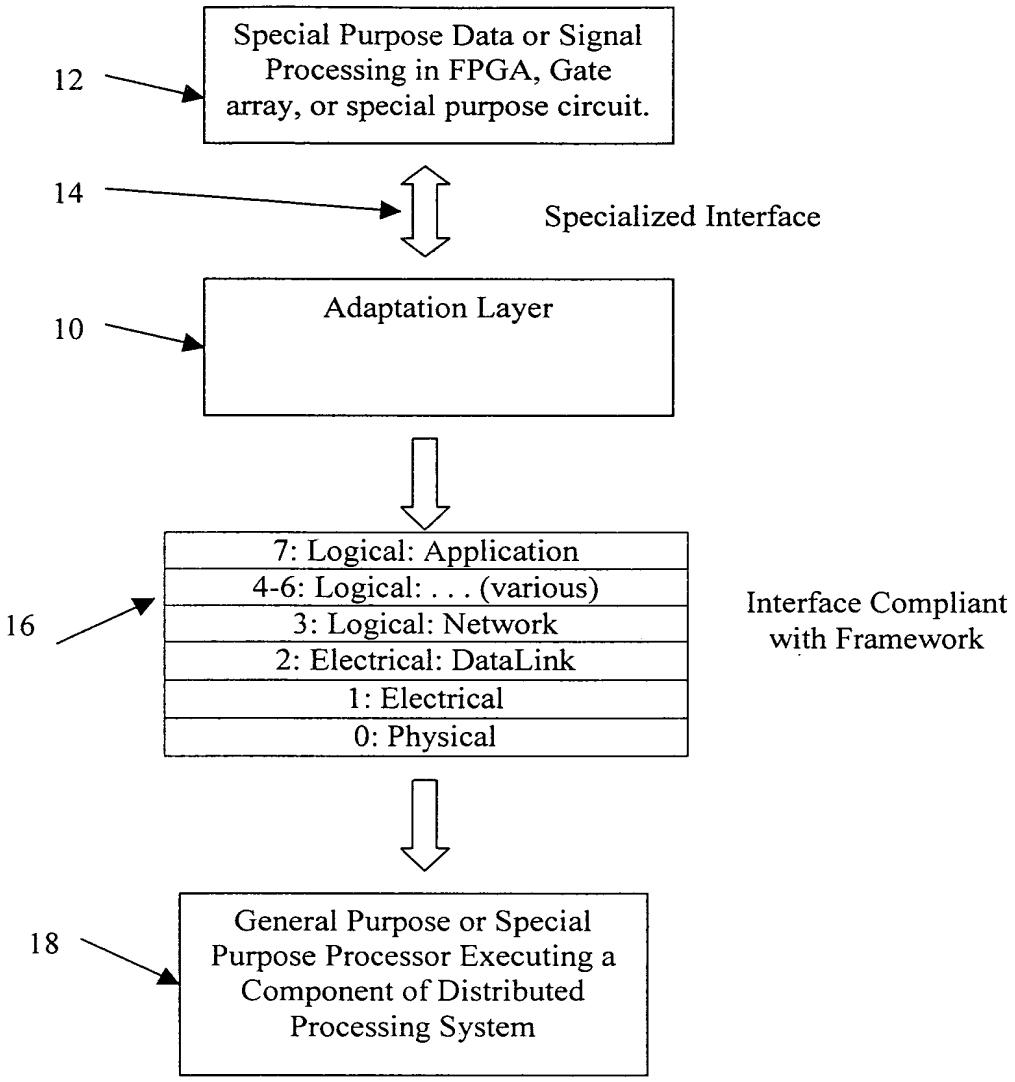

12
Special Purpose Data or Signal Processing in FPGA, Gate array, or special purpose circuit.
14
Specialized Interface
10
Adaptation Layer
16
7: Logical: Application
4-6: Logical: . . . (various)
3: Logical: Network
2: Electrical: DataLink
1: Electrical
0: Physical
Interface Compliant with Framework
18
General Purpose or Special Purpose Processor Executing a Component of Distributed Processing System

Figure 1

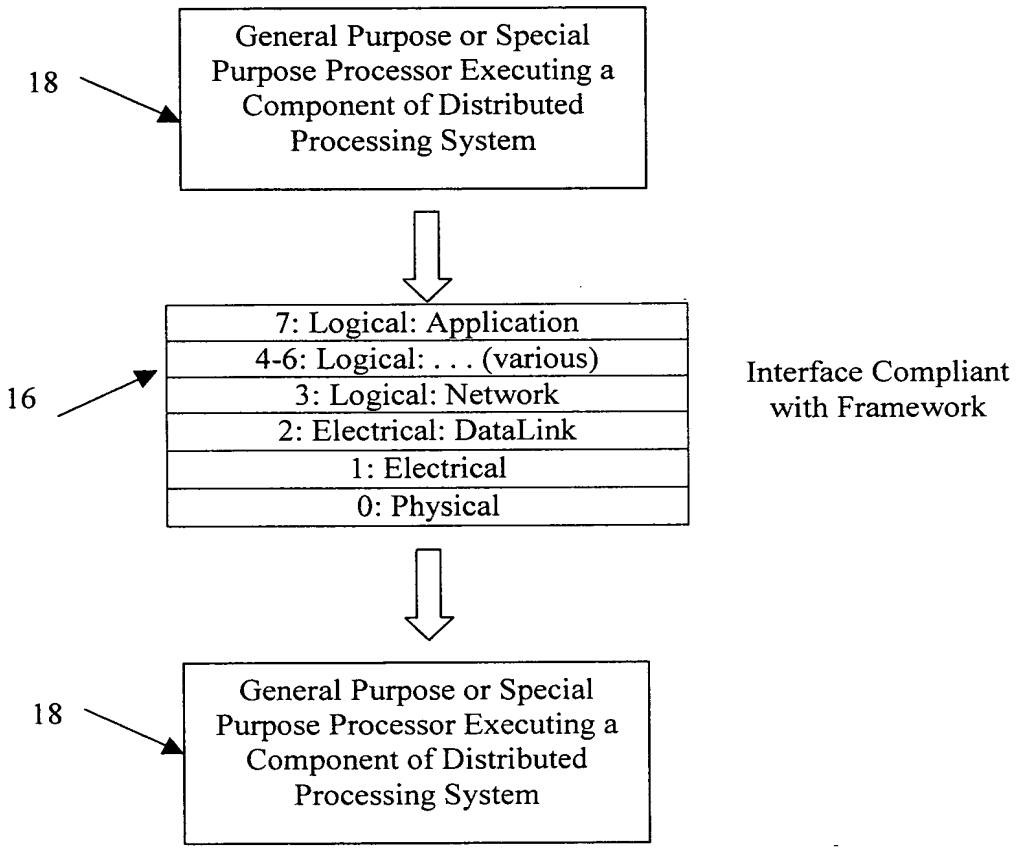
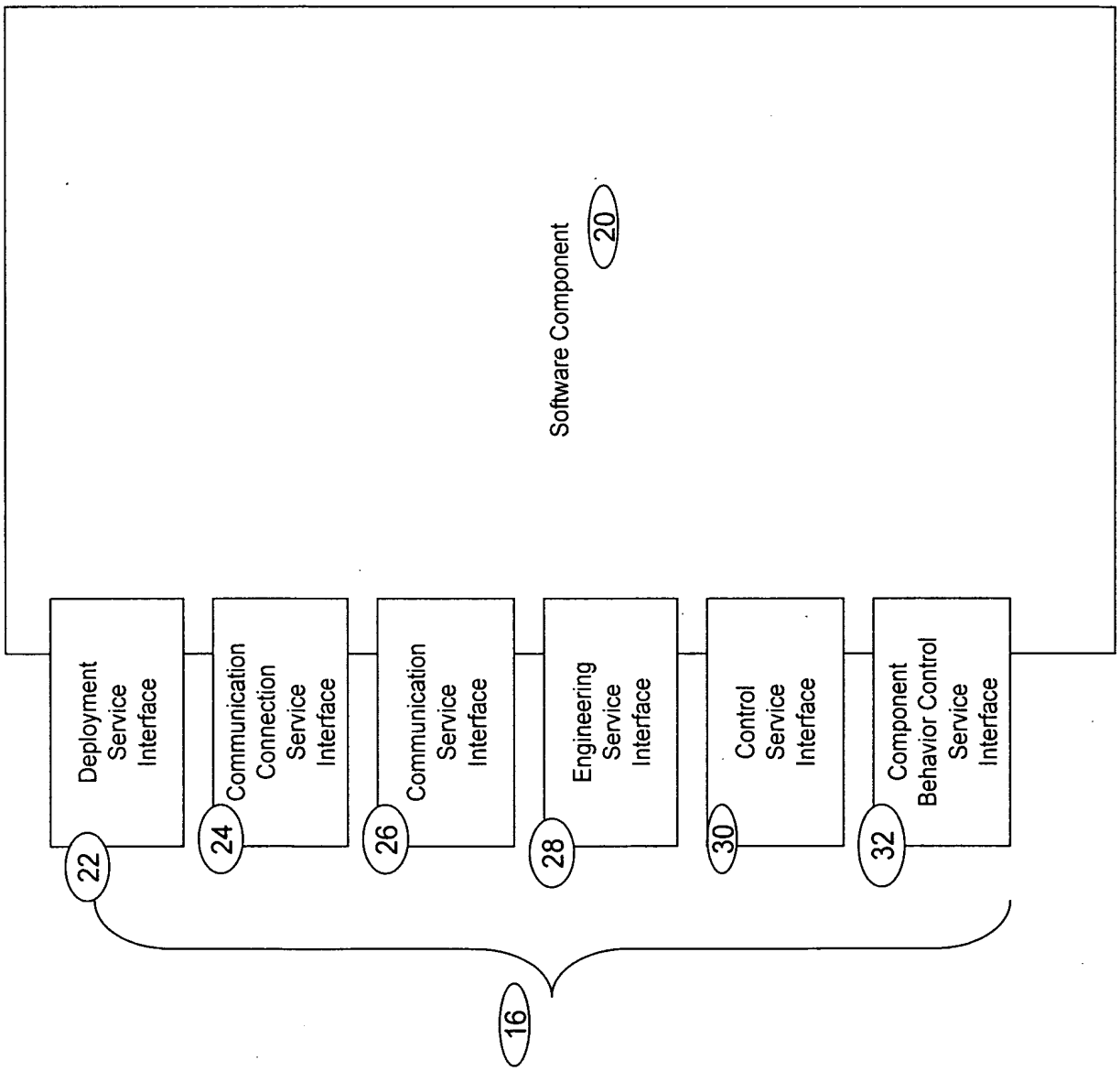

18
General Purpose or Special Purpose Processor Executing a Component of Distributed Processing System
16
7: Logical: Application
4-6: Logical: . . . (various)
3: Logical: Network
2: Electrical: DataLink
1: Electrical
0: Physical
Interface Compliant with Framework
18
General Purpose or Special Purpose Processor Executing a Component of Distributed Processing System

Figure 2A

Figure 2B


Software Component
20
Deployment Service Interface
22
Communication Connection Service Interface
24
Communication Service Interface
26
Engineering Service Interface
28
Control Service Interface
30
Component Behavior Control Service Interface
32
16

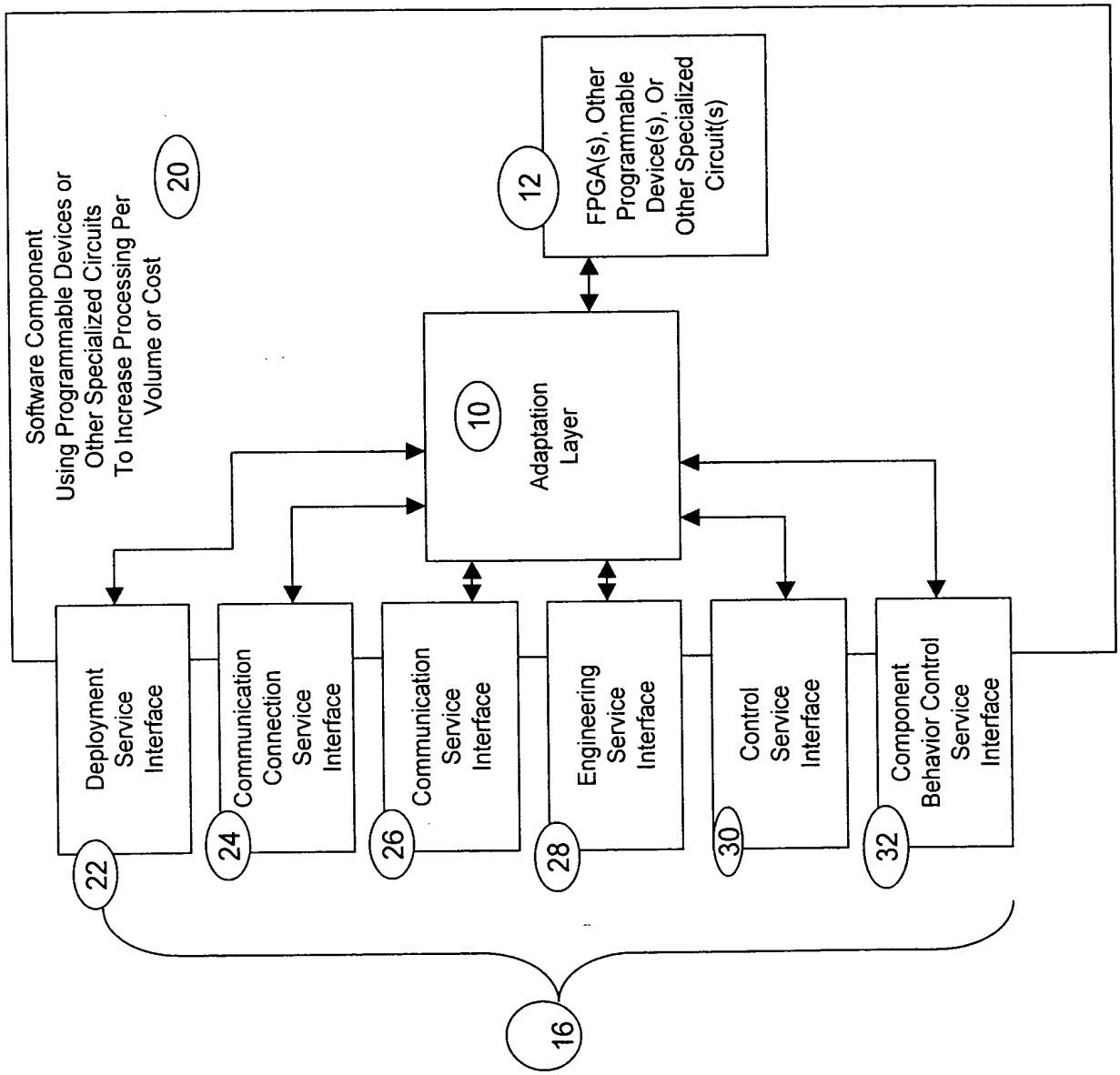

Software Component
Using Programmable Devices or
Other Specialized Circuits
To Increase Processing Per
Volume or Cost
20
12
FPGA(s), Other
Programmable
Device(s), Or
Other Specialized
Circuit(s)
10
Adaptation
Layer
Deployment
Service
Interface
22
Communication
Connection
Service
Interface
24
Communication
Service
Interface
26
Engineering
Service
Interface
28
Control
Service
Interface
30
Component
Behavior Control
Service
Interface
32
16

Figure 3

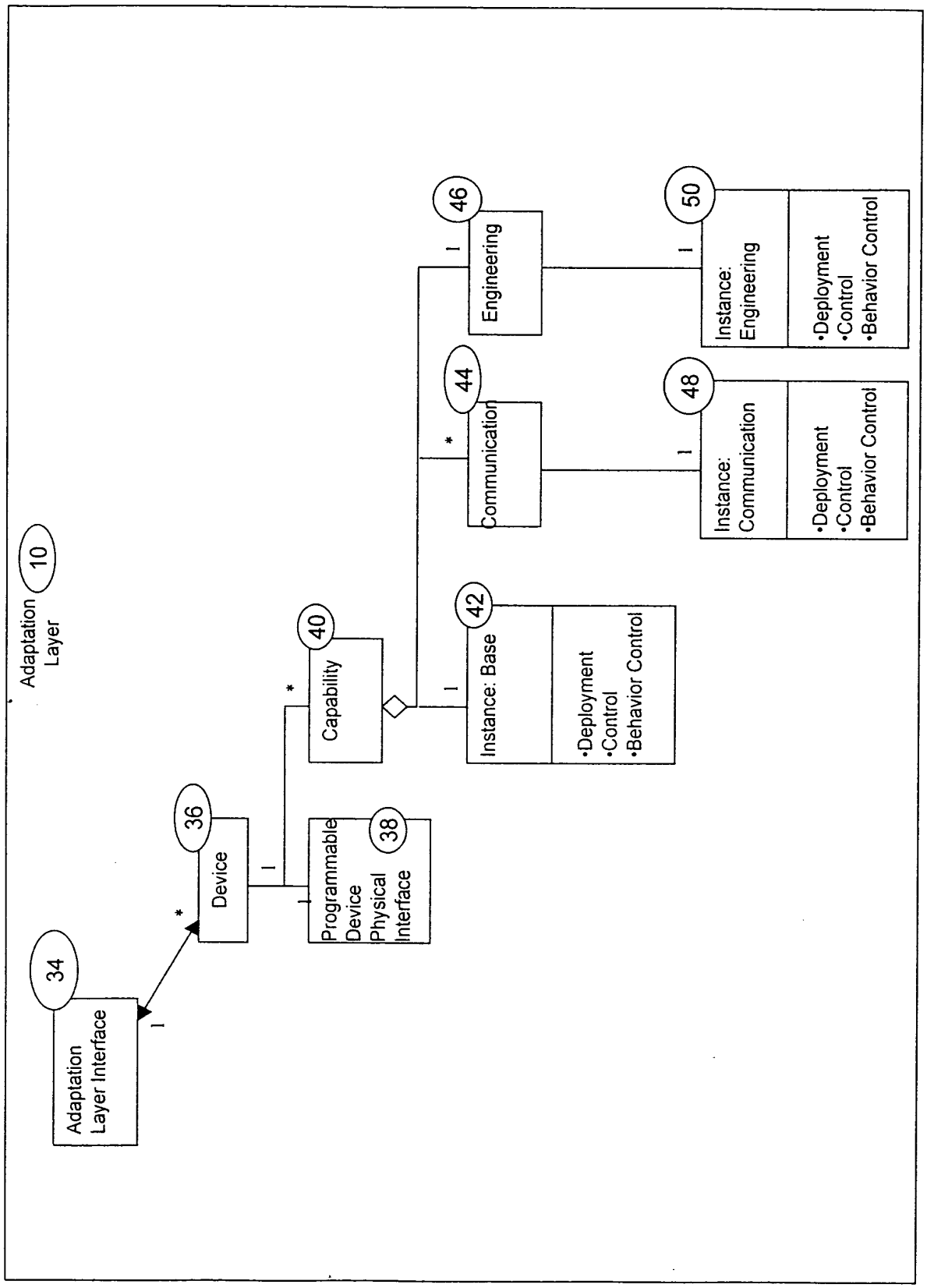

Adaptation Layer
10
34
Adaptation Layer Interface
36
Device
38
Programmable Device Physical Interface
40
Capability
42
Instance: Base
•Deployment
•Control
•Behavior Control
44
Communication
46
Engineering
48
Instance: Communication
•Deployment
•Control
•Behavior Control
50
Instance: Engineering
•Deployment
•Control
•Behavior Control
1
*

Figure 4

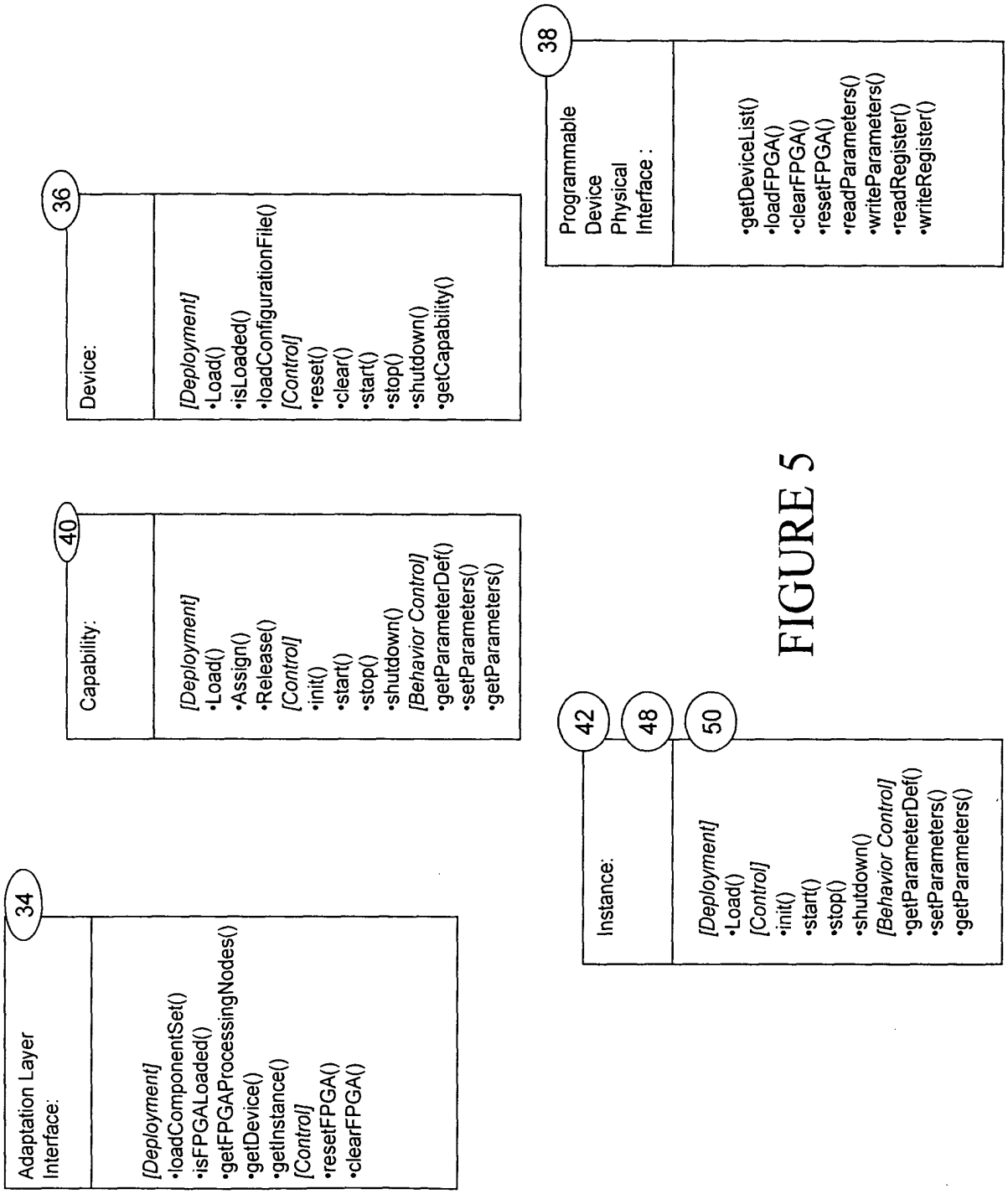

34
Adaptation Layer Interface:
[Deployment]
•loadComponentSet()
•isFPGALoaded()
•getFPGAProcessingNodes()
•getDevice()
•getInstance()
[Control]
•resetFPGA()
•clearFPGA()
40
Capability:
[Deployment]
•Load()
•Assign()
•Release()
[Control]
•init()
•start()
•stop()
•shutdown()
[Behavior Control]
•getParameterDef()
•setParameters()
•getParameters()
36
Device:
[Deployment]
•Load()
•isLoaded()
•loadConfigurationFile()
[Control]
•reset()
•clear()
•start()
•stop()
•shutdown()
•getCapability()
38
Programmable Device Physical Interface :
•getDeviceList()
•loadFPGA()
•clearFPGA()
•resetFPGA()
•readParameters()
•writeParameters()
•readRegister()
•writeRegister()
42
48
50
Instance:
[Deployment]
•Load()
[Control]
•init()
•start()
•stop()
•shutdown()
[Behavior Control]
•getParameterDef()
•setParameters()
•getParameters()

FIGURE 5

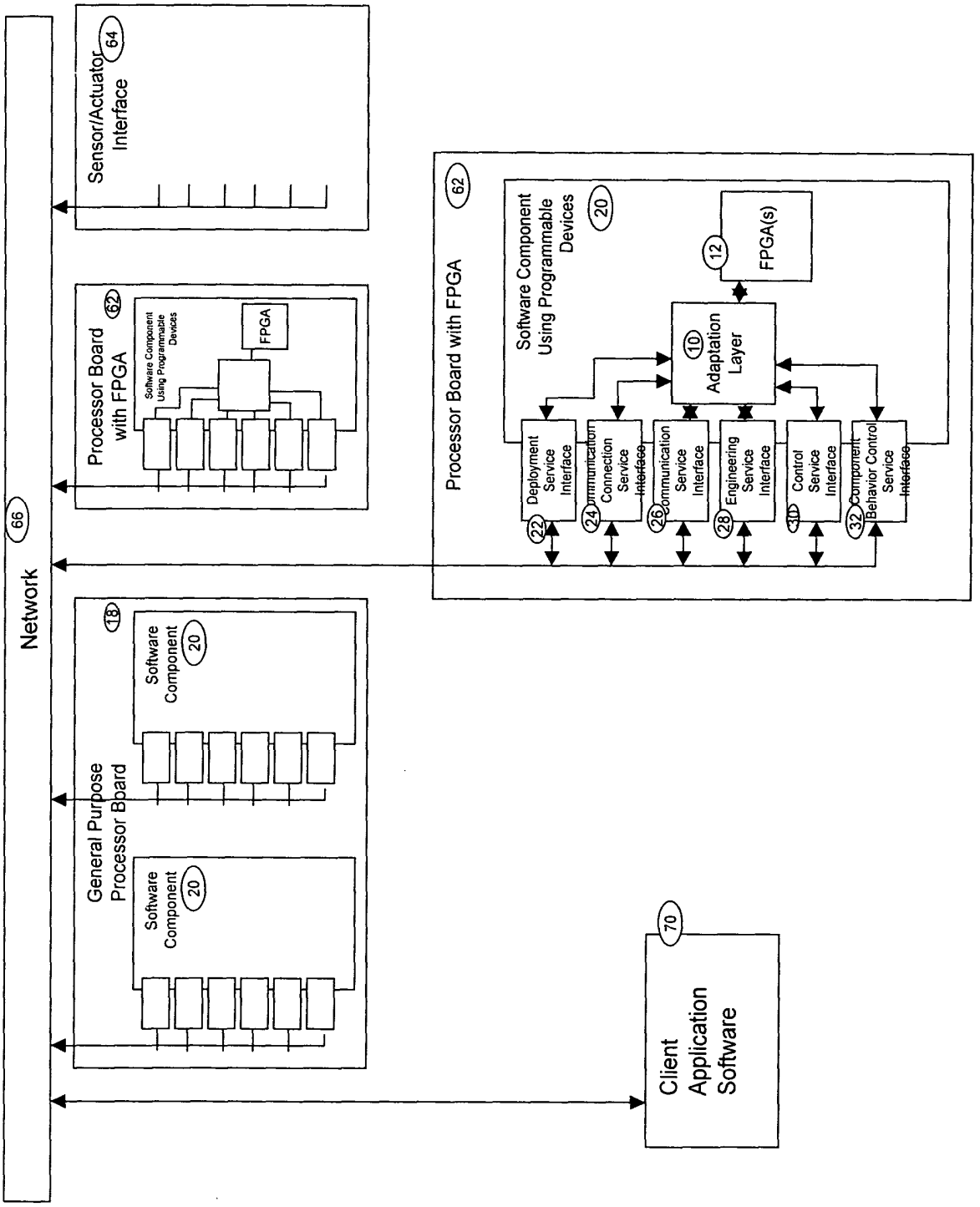

Network
66
Sensor/Actuator Interface
64
Processor Board with FPGA
62
Software Component Using Programmable Devices
FPGA
General Purpose Processor Board
18
Software Component
20
Software Component
20
Processor Board with FPGA
62
Software Component Using Programmable Devices
20
FPGA(s)
12
Adaptation Layer
10
Deployment Service Interface
22
Communication Connection Service Interface
24
Communication Service Interface
26
Engineering Service Interface
28
Control Service Interface
30
Component Behavior Control Service Interface
32
Client Application Software
70

Figure 6

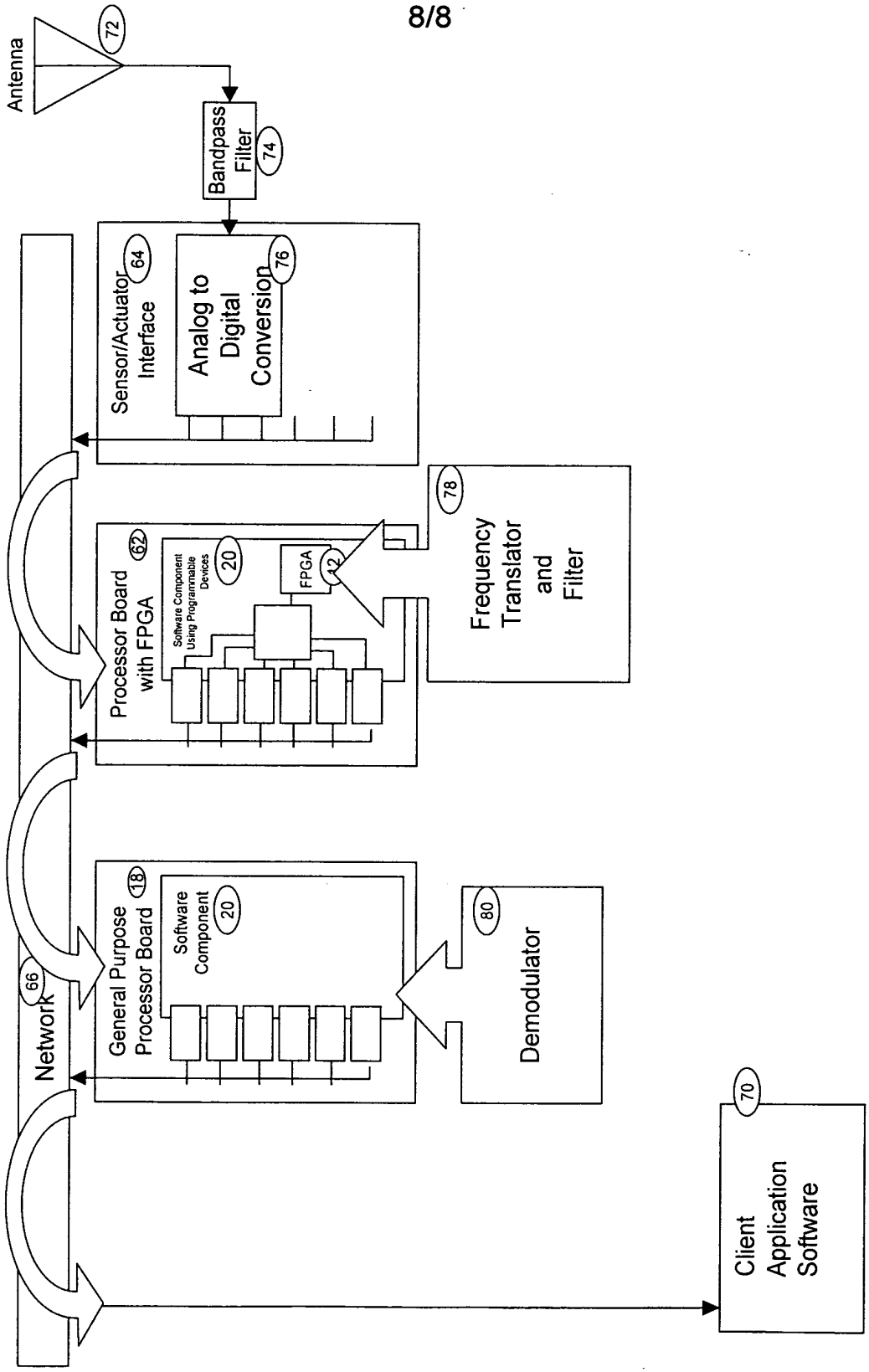

Antenna
72
Bandpass Filter
74
Sensor/Actuator Interface
64
Analog to Digital Conversion
76
Processor Board with FPGA
62
Software Component Using Programmable Devices
20
FPGA
42
Frequency Translator and Filter
78
General Purpose Processor Board
18
Software Component
20
Demodulator
80
Network
66
Client Application Software
70

Figure 7